

What is claimed is:

1. A multi-band antenna using a whip having an independent power feeding function in a wireless telecommunication terminal, comprising:

a first feed point for feeding an electric signal provided from an electric signal providing means;

a second feed point for feeding an electric signal provided from the electric signal providing means;

a plurality of radiating means for radiating the electric signal fed from the first feed point in a form of an electromagnetic wave signal; and

a whip radiating means for radiating the electric signal fed from the second feed point in a form of an electromagnetic wave signal in order to increase the radiant efficiency of the electromagnetic wave signal radiated from the radiating means and extend a bandwidth when the whip radiating means is drawn out of the wireless telecommunication terminal.

20

2. The antenna as recited in claim 1, wherein the second feed point feeds by receiving the electric signal through a separate second transmission line diverged from a first transmission line providing the electric signal from the electric signal providing means to the first feed point.

25

3. The antenna as recited in claim 1 or 2, wherein the whip radiating means is drawn into the wireless telecommunication terminal, thereby shutting off the electric signal supply fed in the second feed point.

30

4. The antenna as recited in claim 1 or 2, wherein as part of the whip radiating means is drawn out of the wireless telecommunication terminal, a first contact member formed in one side of the lower part of the means contacts

35

with the second feed point through the second contact member in a frame.

5        5. The antenna as recited in claim 1 or 2, wherein as part of the whip radiating means is drawn into the wireless telecommunication terminal, the connection between the first contact member formed in one side of the lower part of the means and the second contact member is disconnected, and thus, the contact with the second feed point is cut off.

10

6. The antenna as recited in claim 1 or 2, wherein the whip radiating means is a monopole-type antenna radiating an electromagnetic wave signal resonating in 1 GHz frequency band.

15

7. The antenna as recited in claim 1 or 2, wherein the whip radiating means is put into a led-penetrating opening formed in one side of the upper part of the wireless telecommunication terminal, and drawn in and out of the wireless telecommunication terminal.

20

8. The antenna as recited in claim 1 or 2, further comprising:

25        a diverging means for diverging the electric signal fed in the first feed point and transmitting into the radiating means among a plurality of radiating means.

9. The antenna as recited in claim 8, wherein a multiple number of radiating means includes:

30        a first radiating means for receiving the electric signal fed in the first feed point through the diverging means and radiating the electric signal in a form of an electromagnetic wave signal of a Code Division Multiple Access (CDMA) frequency band;

35        a second radiating means for radiating the electric

signal fed in the first feed point in a form of an electromagnetic wave signal of a U.S. personal communication service (USPCS) frequency band; and

5 a third radiating means for receiving the electric signal fed in the first feed point through the diverging means and radiating the signal in a form of an electromagnetic wave signal of a Global Positioning System (GPS) frequency band.

10 10. The antenna as recited in claim 9, wherein the first radiating means is diverged from an end of the diverging means to the upper part of the inside of the wireless telecommunication terminal, arrayed in a form of a meander line toward a direction of the upper side of the  
15 inside of the wireless telecommunication terminal, and radiates electric signals divided in the diverging means in a direction opposite to the direction of the electric signal of the diverging means.

20 11. The antenna as recited in claim 9, wherein the first radiating means is a conductive wire having a width of  $0.0014\lambda_0$  and a physical length corresponding to an electric length of  $0.4\lambda_0$  with respect to a corresponding resonance frequency band;

25 the second radiating means is a conductive wire having a width of  $0.0053\lambda_0$  and a physical length corresponding to an electric length of  $0.27\lambda_0$  with respect to a corresponding resonance frequency band; and

30 the third radiating means is a conductive wire having a width of  $0.0128\lambda_0$  and a physical length corresponding to an electric length of  $0.18\lambda_0$  with respect to a corresponding resonance frequency band.

35 12. The antenna as recited in claim 9, wherein each radiating means is attached to one side of the frame

separately and mounted in one side of the upper part of the rear of the wireless telecommunication terminal.

13. The antenna as recited in claim 1 or 2, wherein  
5 the whip radiating means includes a conductive wire having a length of 60mm and an external diameter of  $0.7\Phi$ .

14. The antenna as recited in claim 1 or 2, wherein  
10 each of the radiating means is a conductive wire of nickel-plated copper, a conductive wire of tin-plated copper, or a conductive wire of beryllium-copper.

15. The antenna as recited in claim 1 or 2, wherein  
15 the first feed point is formed in the right and left center of the upper part in the wireless telecommunication terminal, and

the radiating means includes:

a fourth radiating means for radiating the electric  
20 signal fed in the first feed point in a form of an electromagnetic wave signal of the CDMA frequency band;

a fifth radiating means for radiating the electric  
signal fed in the first feed point in a form of  
electromagnetic wave signal of the GPS frequency band;

a sixth radiating means for radiating the part of the  
25 electric signal fed in the first feed point in a form of  
electromagnetic wave signal; and

a short circuit pin for grounding the sixth radiating  
means.

30 16. The antenna as recited in claim 15, wherein the  
fourth radiating means is diverged from the first feed  
point to the inner upper part of the inside of the wireless  
telecommunication terminal, and arrayed in a meander line  
in a direction toward one side of the upper part of the  
35 terminal.

17. The antenna as recited in claim 15, wherein the fourth radiating means is a conductive wire having a width of  $1.5 \times 10^{-3}\lambda_0$ , a thickness of  $0.6 \times 10^{-3}\lambda_0$ , and a length of  $0.7\lambda$  with respect to a corresponding resonance frequency band;

the fifth radiating means is a conductive wire having a width of  $1.5 \times 10^{-3}\lambda_0$ , a thickness of  $0.6 \times 10^{-3}\lambda_0$ , and a length of  $0.35\lambda$  with respect to a corresponding resonance frequency band; and

the sixth radiating means is a conductive wire having a width of  $1.5 \times 10^{-3}\lambda_0$ , a thickness of  $0.6 \times 10^{-3}\lambda_0$ , and a length of  $0.35\lambda$  with respect to a corresponding resonance frequency band.

15

18. The antenna as recited in claim 15, wherein the fourth radiating means has a meandering space of  $2.0 \times 10^{-3}\lambda_0$ .

19. The antenna as recited in claim 1 or 2, wherein each of the radiating means is embedded in a form of a copper tape or a flexible PCB preventing surface corrosion by coating the surface with a low voltage injection device.

20